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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,435	12/28/2005	Mitsunori Nodono	023174-0151	3862

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FOLEY AND LARDNER LLP
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EXAMINER

SIDDIQUEE, MUHAMMAD S

ART UNIT	PAPER NUMBER
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1726

MAIL DATE	DELIVERY MODE
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11/23/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,435	Applicant(s) NODONO, MITSUNORI	
	Examiner MUHAMMAD SIDDIQUEE	Art Unit 1726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 11-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/2/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's amendment filed on 10/2/2009 was received. Claims 1, 10 are amended and claims 11-16 are withdrawn.

Response to Arguments

1. Applicant's arguments, see pages 5-8, filed 9/2/2010, with respect to the rejection(s) of claim(s) 1-11 under 103 (a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of new references submitted in the IDS.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hidaka et al (US 2003/0044669 A1) in view of Uchida et al (US 2002/0182478 A1).

Regarding claims 1-2, Hidaka discloses a composite polymer electrolyte membrane comprising a porous membrane and the pores are filled with polymer electrolyte. Hidaka also teaches that polymer electrolyte is a block polymer comprising one or more blocks in which sulfonic acid groups (hydrophilic) are introduced and one or more blocks in which polyether sulfones (hydrophobic) are introduced [Abstract; paragraph 0011-0025, 0045-0049]. Hidaka further teaches that the membrane has pore size of 0.01 micrometer (10 nanometer) to 10 micrometer (10000 nanometer) [paragraph 0073]. Hidaka does not teach hydrophilic/hydrophobic domain sizes. However, Uchida discloses a fuel cell comprising a polymer electrolyte membrane and a pair of electrodes having a catalyst layer on a surface which is in contact with the polymer electrolyte membrane and sandwiching the polymer electrolyte membrane therebetween, wherein the catalyst layer of at least one of the electrodes comprises carbon particles supporting a noble metal catalyst, and the carbon particles include at least two kinds of carbon particles adsorbing a polymer electrolyte in mutually different dispersed states [paragraph 0014]. Uchida also teaches that polymer electrolyte comprises a hydrophilic group and a hydrophobic group, and combined size of the hydrophilic and hydrophobic domains ranges from 10 nanometer to 200 nanometer. Uchida further teaches that pores formed on the composite membrane ranges from 10 to 200 nanometer. Hence, due to the size of the hydrophilic and hydrophobic domains and the pore diameter, it is possible to bring the catalyst particles and the polymer electrolyte into contact with each other satisfactorily and increase the reaction area of the catalyst [paragraph 0075-0079]. Thought, Hidaka/Uchida does not explicitly

express the relationship of hydrophilic/hydrophobic domains size and the pore diameter, it is within the technical reach of a skilled artisan to present the relationship of the size of the hydrophilic and hydrophobic domains and the pore diameter in a mathematical formula.

Regarding claims 3-6, Uchida teaches that the size of the hydrophilic and hydrophobic domains ranges from 10 nanometer to 200 nanometer [paragraph 0075].

Regarding claims 7-9, Uchida teaches that the hydrophilic repeating unit has a ($-\text{SO}_3\text{H}$) cation-exchange group [formula 3; paragraph 0072-0073].

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hidaka et al (US 2003/0044669 A1) in view of Uchida et al (US 2002/0182478 A1) as applied in claims 1-9 and further in view of Inagaki et al (US 2003/0104284 A1).

Regarding claim 10, Hidaka/Uchida remains silent about a positively charged ion-exchange group. However, Inagaki teaches that hydrophilic polar group can be an anionic group such as a sulfonic group or a cationic group such as an amine [paragraph 0019]. Therefore, it is within the technical reach of a skilled artisan to choose an anionic group or a cationic group which gives the electrolyte an ionic charge to function.

Conclusion

6. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 9/2/2010 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MUHAMMAD SIDDIQUEE whose telephone number is (571) 270-3719. The examiner can normally be reached on Monday-Thursday, 7:30 am to 4:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Muhammad Siddiquee/
Examiner, Art Unit 1726

/Patrick Joseph Ryan/
Supervisory Patent Examiner, Art Unit 1726